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VOL. 201, NO. 1, APRIL 1, 2013

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On the cover

A mutant version of E-cadherin (green), in which the extracellular and transmembrane domains of the adhesion molecule are fused to the actin-binding domain of α-catenin, forms clusters at cell–cell contacts that align with bundles of actin filaments (red). Hong et al. demonstrate that actin binding helps stabilize cadherin clusters during the assembly of intercellular adherens junctions.
Image © 2013 Hong et al.
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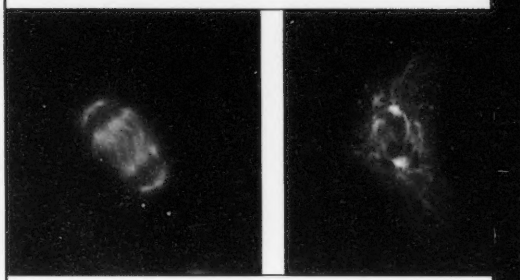

Reboutier et al. use chemical genetics to reveal that the Aurora A kinase promotes central spindle assembly in anaphase by phosphorylating the dynactin subunit P150Glued. Compared to a control cell (left), P150Glued (red) mislocalizes to spindle poles when Aurora A is inhibited (right), and central spindle microtubules (green) are highly disorganized.
Image © 2013 Reboutier et al.
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263 The MIA complex is a conserved and novel dynein regulator essential for normal ciliary motility
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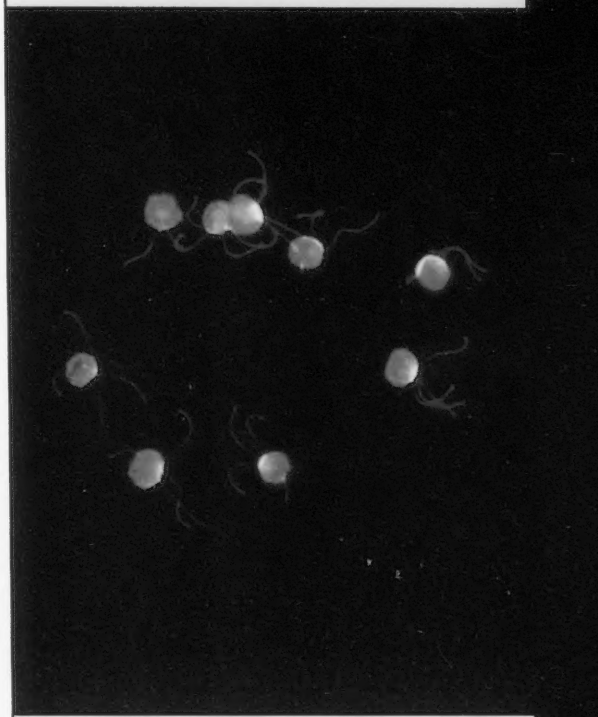

On the cover

Lechtreck et al. reveal that the BBSome complex exports signaling proteins out of cilia. Though phospholipase D (PLD) accumulates in the cilia of *Chlamydomonas* cells lacking the BBSome subunit BBS4, mating these mutants with wild-type algae generates quadraciliated zygotes (pictured), in which the BBSome's function is restored, leading to the rapid export of PLD (red) from cilia (green) to the cell body.

Image © 2013 Lechtreck et al.

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279 Notch increases the shedding of HB-EGF by ADAM12 to potentiate invadopodia formation in hypoxia
Begoña Díaz, Angela Yuen, Shinji Iizuka, Shigeki Higashiyama, and Sara A. Courtneidge

293 Ablation of the mTORC2 component rictor in brain or Purkinje cells affects size and neuron morphology
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309 Smooth muscle fascicular reorientation is required for esophageal morphogenesis and dependent on Cdo
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325 Identifying gene locus associations with promyelocytic leukemia nuclear bodies using immuno-TRAP
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337 Lifetime imaging of a fluorescent protein sensor reveals surprising stability of ER thiol redox
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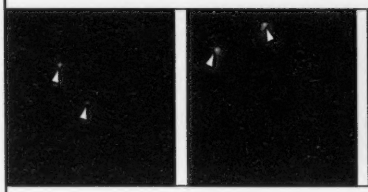
353 A novel single-cell screening platform reveals proteome plasticity during yeast stress responses
Michal Breker, Melissa Gymrek, and Maya Schuldiner



Raaijmakers et al. systematically dissect the function of every dynein subunit and regulatory protein during mitosis. For example, centrosomes (green) are anchored at the periphery of the nucleus (blue) in a control prophase cell (left) but are displaced from the nuclear envelope in cells lacking the dynein heavy chain (center) or the adaptor protein LIS1 (right). Microtubules are labeled in red. Image © 2013 Raaijmakers et al.
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439 Sanpodo controls sensory organ precursor fate by directing Notch trafficking and binding γ-secretase
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On the cover

A dorsal view of a *Drosophila* pupa expressing a GFP fusion protein in its peripheral nervous system shows both the eyes and the sensory bristles that dot the head, thorax, and abdomen of the fly. Upadhyay et al. reveal how a protein called Sanpodo regulates bristle development by activating Notch signaling in some precursor cells while suppressing it in others.
Image © 2013 Upadhyay et al.
See page 439.

449 Release of cellular tension signals self-restorative ventral lamellipodia to heal barrier micro-wounds
Roberta Martinelli, Masataka Kamei, Peter T. Sage, Ramiro Massol, Laya Varghese, Tracey Sciuto, Mourad Toporsian, Ann M. Dvorak, Tomas Kirchhausen, Timothy A. Springer, and Christopher V. Carman

467 EphA2 cleavage by MT1-MMP triggers single cancer cell invasion via homotypic cell repulsion
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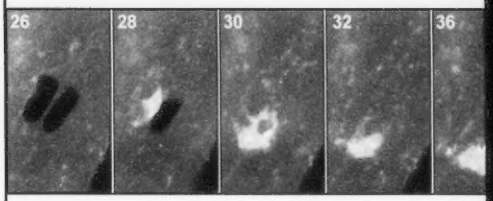

Martinelli et al. describe how lamellipodia (blue arrowheads) on the ventral surface of endothelial cells help close small gaps in the monolayer induced by transmigrating leukocytes.
Image © 2013 Martinelli et al.
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● Why metaphase chromosomes wander
● Three's not a crowd for actin nucleators
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492 ● Victor Ambros: The broad scope of microRNAs
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559 The UBXN-2/p37/p47 adaptors of CDC-48/p97 regulate mitosis by limiting the centrosomal recruitment of Aurora A
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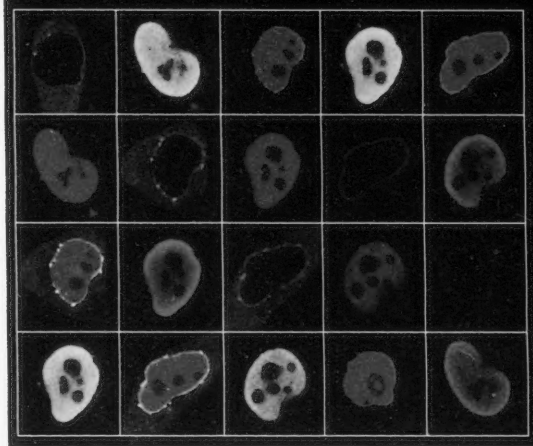

On the cover

Progerin (blue), a mutant form of lamin A found in patients with Hutchinson-Gilford Progeria syndrome, inhibits the nuclear import of pyruvate kinase-SV40NLS (red) but permits the import of streptavidin-SV40NLS (green). In the absence of Progerin, however, both reporter proteins are nuclear. Snow et al. reveal that larger protein cargoes, such as pyruvate kinase-SV40NLS, are more sensitive to the altered Ran GTPase distribution caused by Progerin expression.
Image © 2013 Snow et al.
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577 Dynamic bonds and polar ejection force distribution explain kinetochore oscillations in PtK1 cells
Gul Civelekoglu-Scholey, Bin He, Muyao Shen, Xiaohu Wan, Emanuele Roscioli, Brent Bowden, and Daniela Cimini

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643 Osteoblast mineralization requires β1 integrin/ICAP-1–dependent fibronectin deposition
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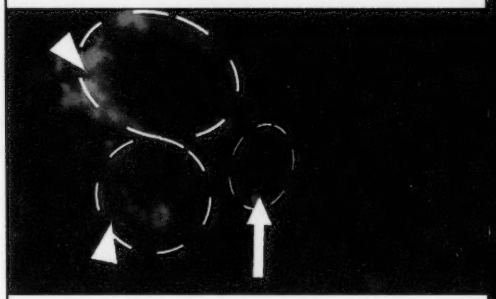

Bufalino et al. examine the asymmetric segregation of damaged proteins between *Drosophila* stem cells and their progeny. Female germline stem cells (arrowheads), for example, retain proteins modified with 2,4-hydroxynonenal (red), limiting their segregation into cystoblasts (arrow), possibly because these latter cells give rise to new flies and therefore need to be protected.
Image © 2013 Bufalino et al.
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Felix Rivera-Molina and Derek Toomre

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Cornelia Kröger, Fanny Loschke, Nicole Schwarz, Reinhard Windoffer, Rudolf E. Leube, and Thomas M. Magin

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693 The interaction between CtIP and BRCA1 is not essential for resection-mediated DNA repair or tumor suppression
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709 Aurora B spatially regulates EB3 phosphorylation to coordinate daughter cell adhesion with cytokinesis
Jorge G. Ferreira, António J. Pereira, Anna Akhmanova, and Helder Maiato

725 Cryo–electron tomography reveals a critical role of RIM1α in synaptic vesicle tethering
Rubén Fernández-Busnadiego, Shoh Asano, Ana-Maria Oprisoreanu, Eri Sakata, Michael Doengi, Zdravko Kochovski, Magdalena Zürner, Valentin Stein, Susanne Schoch, Wolfgang Baumeister, and Vladan Lucic

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On the cover

Neural crest cells (red) migrate through a zebrafish embryo labeled for tubulin (green). Barriga et al. show that the hypoxia inducible factor Hif-1α controls neural crest migration by coordinating epithelial-to-mesenchymal transition and chemotaxis.

Image © 2013 Barriga et al.

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741 Diet controls *Drosophila* follicle stem cell proliferation via Hedgehog sequestration and release
Tiffiney R. Hartman, Todd I. Strochlic, Yingbiao Ji, Daniel Zinshteyn, and Alana M. O'Reilly

759 The hypoxia factor Hif-1α controls neural crest chemotaxis and epithelial to mesenchymal transition
Elias H. Barriga, Patrick H. Maxwell, Ariel E. Reyes, and Roberto Mayor

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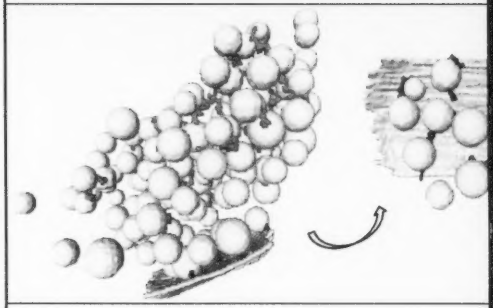
777 Functional implications of calcium permeability of the channel formed by pannexin 1
Fabien Vanden Abeele, Gabriel Bidaux, Dmitri Gordienko, Benjamin Beck, Yuri V. Panchin, Ancha V. Baranova, Dmitry V. Ivanov, Roman Skryma, and Natalia Prevarskaya



3D renderings of a mammalian synapse visualized by cryo–electron tomography show synaptic vesicles (yellow) joined to each other by "connector" filaments (red) and to the active zone (grey) by "tethers" (blue). Fernández-Busnadiego et al. reveal a critical function for the Rab3-interacting molecule RIM1α in synaptic vesicle tethering.
Image © 2013 Fernández-Busnadiego et al.
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- E-cadherin stops embryonic cells from crossing borders
- Bone morphogenetic protein guts it out
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785 The incredible journey: From megakaryocyte development to platelet formation
Kellie R. Machlus and Joseph E. Italiano Jr.

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797 RNF111/Arkadia is a SUMO-targeted ubiquitin ligase that facilitates the DNA damage response
Sara J. Poulsen, Rebecca K. Hamerlik, Sebastian A. Wagner, Deborah Cus Gilsenan, Jan Bellu, Nerine Stedman, Mark Nieuwenhuis, Christian Dalgaard, Adriaan B. Houtsmuller, Jurgen A. Marteijn, Sibylle Benedictus, and Niels Mailand

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809 Long-range heterochromatin association is mediated by silencing and double-strand DNA break repair proteins
Jacob G. Kirkland and Rohinton T. Kamakaka

827 Spatiotemporal control of PopZ localization through cell cycle–coupled multimerization
Géraldine Laloux and Christine Jacobs-Wagner

843 A Wee1 checkpoint inhibits anaphase onset
Noel Lianga, Elizabeth C. Williams, Erin K. Kennedy, Carole Doré, Sophie Pilon, Stéphanie L. Girard, Jean-Sebastien Deneault, and Adam D. Rudner

863 A novel pathway spatiotemporally activates Rac1 and redox signaling in response to fluid shear stress
Yunhao Liu, Caitlin Collins, William B. Kiosses, Ann M. Murray, Monika Josh Tyson R. Shepherd, Ernesto J. Fuentes, and Elisa Izma

875 The Hippo pathway polarizes the actin cytoskeleton during collective migration of *Drosophila* border cells
Eliana P. Lucas, Ichha Khanal, Pedro Gaspar, Georgina C. Fletcher Cedric Polesello, Nicolas Tapon, and Barry J. Thompson

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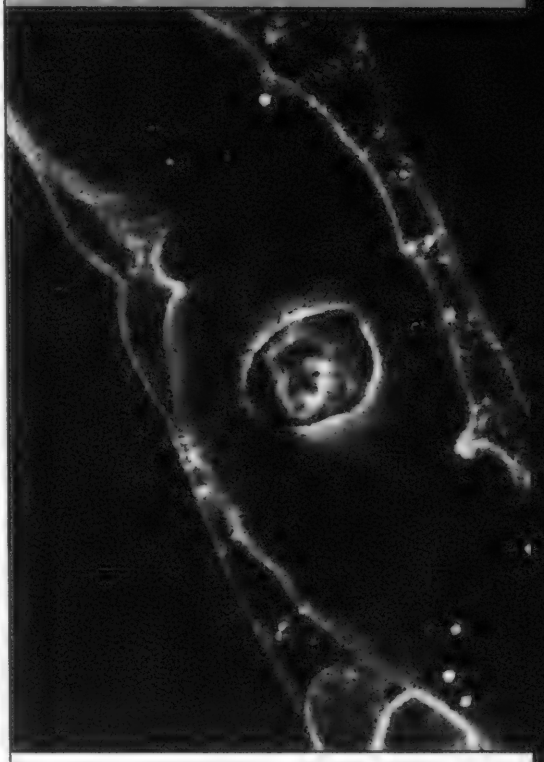

On the cover

During the development of *C. elegans* hermaphrodites, the uterine anchor cell (orange) invades through basement membrane (blue) to establish the uterine–vulval connection required for mating and egg laying. Hagedorn et al. demonstrate that localized netrin signaling focuses invadopodia-driven invasion by the anchor cell.

Image © 2013 Hagedorn et al.

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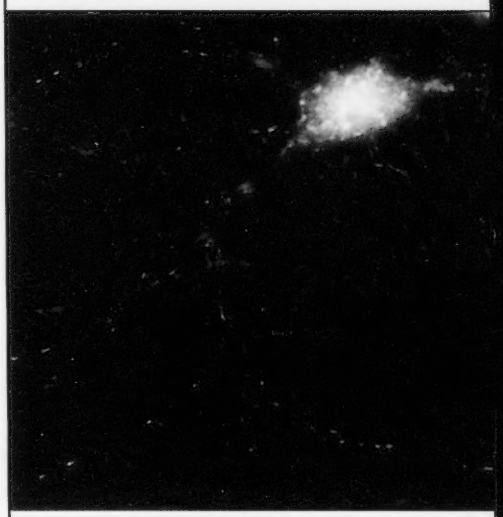
887 Dynamic microtubules produce an asymmetric E-cadherin–Bazooka complex to maintain segment boundaries
Natalia A. Bulgakova, Ilya Grigoriev, Alpha S. Yap, Anna Akhmanova, and Nicholas H. Brown

903 The netrin receptor DCC focuses invadopodia-driven basement membrane transmigration in vivo
Elliott J. Hagedorn, Joshua W. Ziel, Meghan A. Morrissey, Lara M. Linden, Zheng Wang, Qiuyi Chi, Sam A. Johnson, and David R. Sherwood

915 Liprin-α2 promotes the presynaptic recruitment and turnover of RIM1/CASK to facilitate synaptic transmission
Samantha A. Spangler, Sabine K. Schmitz, Josta T. Kevenaar, Esther de Graaff, Heidi de Wit, Jeroen Demmers, Ruud F. Toonen, and Casper C. Hoogenraad

929 The adhesion protein IgSF9b is coupled to neuroligin 2 via S-SCAM to promote inhibitory synapse development
Jooyeon Woo, Seok-kyu Kwon, Jungyong Nam, Seungwon Choi, Hideto Takahashi, Dilja Krueger, Joohyun Park, Yeunkum Lee, Jin Young Bae, Dongmin Lee, Jaewon Ko, Hyun Kim, Myoung-Hwan Kim, Yong Chul Bae, Sunghoe Chang, Ann Marie Craig, and Eunjoon Kim

945 Injury-induced BMP signaling negatively regulates *Drosophila* midgut homeostasis
Zheng Guo, Ian Driver, and Benjamin Ohlstein



Woo et al. identify IgSF9b, a homophilic adhesion molecule that promotes the development of inhibitory synapses. In cultured hippocampal neurons, IgSF9b (green) and the scaffold protein gephyrin (red) localize to distinct, but interconnected, domains of inhibitory synapses (blue).
Image © 2013 Woo et al.
See page 929.

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Articles with related stories in the IN THIS ISSUE section have page numbers in RED; articles related to the IN FOCUS feature have page numbers in BLUE.

On the cover

Wolf et al. explore the physical limits of cell migration. A cell labeled for F-actin (cyan) tries to move its nucleus (red/yellow) through a high-density lattice of rat tail collagen (grey) in the absence of matrix metalloproteinase activity.
Image © 2013 Wolf et al.
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Corrections

1085 Desmosomal cadherins utilize distinct kinesins for assembly into desmosomes
Oxana E. Nekrasova, Evangeline V. Amargo, William O. Smith, Jing Chen, Geri E. Kreitzer, and Kathleen J. Green

1087 FBH1 promotes DNA double-strand breakage and apoptosis in response to DNA replication stress
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Weigert et al. review methods to image subcellular events in living animals, including the internalization of systemically injected fluorescent markers into small endocytic vesicles (red) in the proximal tubuli of mouse kidneys. Cell membranes are labeled green.
Image © 2013 Weigert et al.
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